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CENTRAL INTELLIGENCE AGENCY

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COUNTRY Hungary

REPORT

SUBJECT Development of Anti-Tank Rockets at the Műszertechnikai Vallalat, Budapest

DATE DISTR. 20 February 1957

NO. PAGES 3

REQUIREMENT NO. RD

REFERENCES

DATE OF INFO.

PLACE & DATE ACQ.

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1. During the early part of 1953, research into anti-tank rockets was started at the Műszertechnikai Vallalat (Military Research Center), Nagy Lajos Király Utja 167, Budapest. During the following two years efforts were made to produce and perfect three different sizes of anti-tank rockets, the 68 mm., 94 mm., and 120 mm. The 68 mm. Rocket, known as a "tank-destroying grenade" was an infantry weapon weighing two and one-half kilograms. The projector tube weighed from seven to seven and one-half kilograms. (Attached is a drawing, from a rough sketch, of the 86 mm. Rocket.)
2. The drawings and specifications for these were received from the Institute of Military Technical Planning (Haditechnikai Intezet, Szilagyi Erzsébet Fásor) Budapest. It was the Research Center's task to produce the required prototypes
3. The missile itself was based on the Bazooka type of rocket (Panzerfaust), but the projector, or launcher, was an original Hungarian design. Examples of American projectors had, however, been made available to the Hungarian experts for study.
4. Tests and continuous alterations were made until a degree of accuracy had been reached, enabling successive shots to be placed on a square 2 m. x 2 m. at a range of 500 meters. This was the effective range of the 68 mm. rocket.
5. Originally, an aluminium-alloy head was used together with fins of the same material. This was damaged too easily and had to be replaced by steel. The only aluminium alloy used in the final version was that in the shaft holding the rocket propellant and around the rear orifice. The aluminium alloy was known as FC-1.
6. The steel used in the head (Points A-B on the attached drawing) was one millimeter thick, as was that used in the funnel-shaped part BCJ. The walls of the head (Points B-D) were one and one-half millimeter. Maximum tolerances were plus or minus one-tenth of a millimeter. The alloy tube for the propellant material was two and one-half millimeters thick, also with a tolerance of plus or minus one-tenth of a millimeter. This had to withstand the pressure of 350 kilograms per square centimeter generated by the propellant.

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(Note: Washington distribution indicated by "X"; Field distribution by "#")

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7. The propellant used was in the shape of six thin rods. These were ignited by means of a cap housed in a bakelite plug inserted in the rear of the propellant-tube (Point H on drawing). The gases formed pushed out the cap to the rear of the launcher immediately on firing. The orifice through which the gases emerged (Point G) was 7.3 mm. in diameter, with a tolerance of plus or minus .05 mm. The gases generated were sufficient to propel the rocket on the first three to five hundred meters of its flight.
8. The overall length of the rocket was about 420 mm. The final angle of the funnel (Points BCJ on drawing) was 70 degrees, but experiments had previously been made to see if angles such as 50 degrees or 90 degrees would be suitable.
9. The explosive chamber (Points BCED) was filled with Nitropent. This was ignited by the detonator (Point E) which was itself ignited by the blow-back of flames from the fuse (Point A). Before firing, the safety plug (Point K) had, of course, to be withdrawn. The space between the fuse and the explosive (Points ABCJ) was empty.
10. The launching-tube for this rocket was about 2 meters long. In diameter it was slightly larger than 68 mm., as the rocket actually slid along the tube on three ridges which ran along the inside. They were straight, not spiralled (Cross-section at L, not to scale).
11. Production of the cases for these rockets, both steel and aluminium parts, was carried out at the following factories:
 - a. Csepel Iron and Steel Factory, formerly the Mátyás Rákosi Works.
 - b. Zuglói Aluminium Gyár, Erzsébet Királyné Ut, Budapest.
 - c. Felnemet near Eger.

Fuses were produced at the Fehérvári Mechanikai Művek, formerly Vadasztolteny, at Székesfehérvár. The rockets were filled with explosives at factories at Törökbálint (20 kilometers from Budapest and near Lake Balaton) and at Füzös, also near Lake Balaton.
12. The 94 mm. and 120 mm. were similar in design to the 68 mm. It was found, however, that due to the pressure generated by the propellant gases, the 2.5 mm. aluminium alloy used in the shaft of the smaller rocket had to be replaced by steel 1.2 mm. thick.
13. The effectiveness of the 94 mm. rocket was such that it could pierce armour plate 270 mm. thick. The resultant hole, though quite wide on the outside of the armour plate, tapered down to 14 mm. on the inside. Nothing is known of the effectiveness of the other calibers.

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14. The Soviets gave no help or advice to the Műszertechnikai Vallalat while it was engaged in producing these rockets. Although Soviets were represented in the Institute of Military Technical Planning, which had provided the specifications, those who visited the Institute were by no means experts and were concerned solely with keeping an eye on production targets and urging the Hungarians to greater efforts. However, samples of the prototypes of each item were always sent to the Soviet Union. In the case of these rockets half of the prototypes produced at the Institute were painted khaki and stamped with details written in Russian. Those remaining in Hungary were left unpainted.

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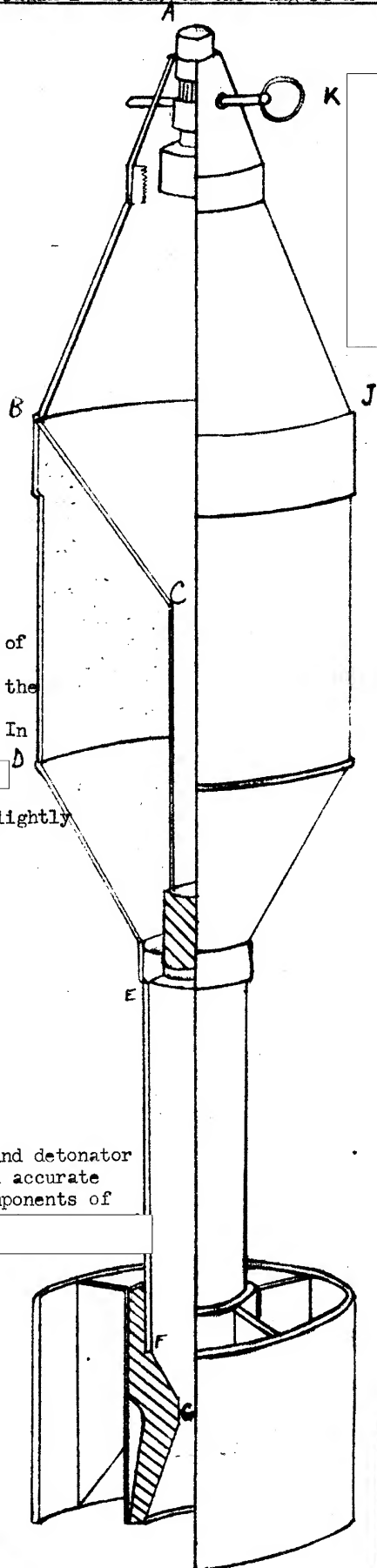
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Drawing (from an Original Sketch) of the Hungarian 86mm Rocket

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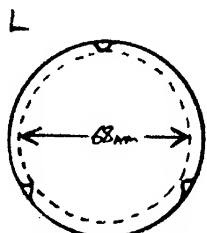
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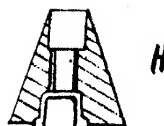
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sketch shows the end of the fins to be in line with the end of the propellant tube. In another sketch, however,

the fins extend slightly behind the tube.



The drawings of the fuse and detonator should not be taken as an accurate representation of the components of either unit



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